

Applic. No. : 10/057,105

Remarks:

Reconsideration of the application is requested.

Claims 1-24 and 26 remain in the application. Claims 1 and 16 have been amended. Claims 25 and 27 have been cancelled.

In item 5 on page 3 of the above-identified Office action, claims 1, 4, 7-8, 10-14, 16, 19, 22-25, and 27 have been rejected as being obvious over *Epworth* (GB 2 269 953) in view of *Hayee* (NRZ vs. RZ in 10-40 Gbit/s dispersion-managed WDM transmission systems) under 35 U.S.C. § 103.

In item 6 on page 4 of the Office action, claims 2-3, 5-6, 17-18, and 20-21 have been rejected as being obvious over *Epworth* and *Hayee* in view of *Das et al.* (US 5,703,708) under 35 U.S.C. § 103.

In item 7 on page 5 of the Office action, claims 9 and 15 have been rejected as being obvious over *Epworth* and *Hayee* in view of *Frankel* (US 6,096,496) under 35 U.S.C. § 103.

In item 3 on page 2 of the Office action, claim 26 has been held allowable, if rewritten or amended to include all of the limitations of the base claim and any intervening claims.

(Claim 24 is nearly identical to claim 26, consequently, it is

Applic. No. : 10/057,105

assumed that claim 24 is also allowable, if rewritten or amended to include all of the limitations of the base claim and any intervening claims.)

The rejections and the objection have been noted.

Consequently, claims 1 and 16 have been amended to recite a limitation previously recited in claims 25 and 27, in an effort to even more clearly define the invention of the instant application.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 (similarly claim 16) as amended calls for, inter alia:

An optical transmitter for generating a digital optical signal sequence, comprising:

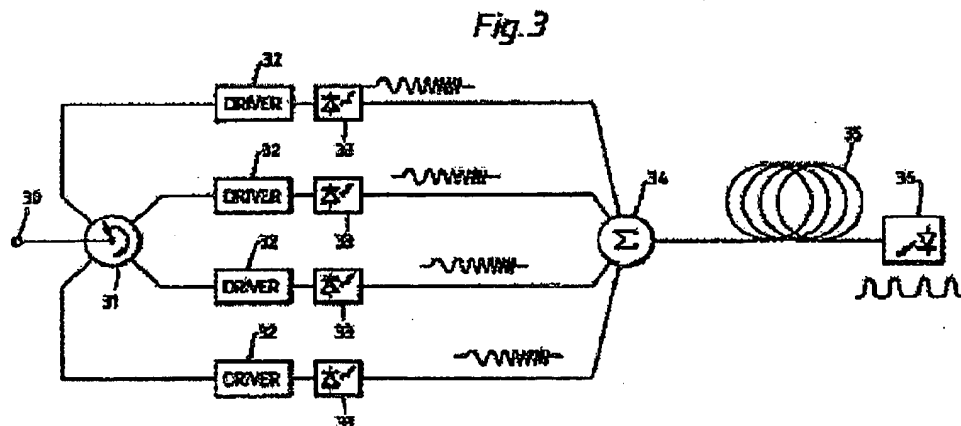
a plurality of independently drivable light transmitters, said light transmitters generating respective optical signals for respective bits of a digital electrical signal sequence, *said respective optical signals having a length not greater than a length of the corresponding respective bits of the digital electrical signal sequence*, said respective optical signals being combined and superposed into an optical signal path; and

a control device distributing the bits between said light transmitters, said bits being distributed such

Applic. No. : 10/057,105

that before a HIGH state output, a respective light transmitter is in a LOW state.

Fig. 3 of *Epworth*, which is re-produced below, clearly shows that the pulse emitted by the respective laser is a chirped pulse of extended duration with "a time-related frequency spectrum such that the pulse is compressed in its passage through the fibre transmission path 35 ... to a duration not exceeding one bit period for a bit rate" (first paragraph on page 4 of *Epworth*).



Consequently, in *Epworth* the length of the respective optical signals generated by the light transmitters is greater than a length of the corresponding bit, in contrast to the present invention as recited in the claims. Consequently, the combined prior art references *Epworth* and *Hayee* do not teach or suggest *all* the claim limitations as is required for a *prima facie* case of obviousness according to MPEP § 2143.

Applic. No. : 10/057,105

Furthermore, on page 3 of the Office action, the Examiner stated:

Epworth does not disclose said bit being distributed such that before a HIGH state output, a respective light transmitter is in a LOW state. Hayee disclosed a return-to-zero modulation transmission over fiber. The LOW state/HIGH state transition transmitter characteristic as claimed is equivalent to a P2 modulation format. It would have been obvious to one ordinary skill in the art at the time of invention to use RZ modulation with the Epworth system since RZ modulation is better than NRZ in combating self-phase modulation (SPM) in WDM systems as taught in Hayee (see p.407 last column).

Applicant assumes that the Examiner intended to refer to the last **paragraph** of Hayee since Hayee does not have a last column *per se*. The last paragraph of Hayee states:

We compare NRZ and RZ modulation for systems operating up to 40 Gbit/s with as many as 16 channels. We find that in 10-40 Gbit/s dispersion-managed (SMF + DCF) systems, NRZ is more adversely affected than RZ by nonlinearity which is the main degradation source. However, the **difference between RZ and NRZ** in a 16-channel 40-Gbit/s system is not very significant because dispersion becomes a key limiter. For **≤8 channels, RZ is almost always more optimal.**

(Emphasis added.)

According to the above-emphasized text of Hayee, RZ modulation is not necessarily superior to NRZ modulation - only if the number of channels is 8 or less, then RZ may be superior.

Applicant notes that Epworth suggests only four "channels" in the diagram of the preferred embodiment (Fig. 4).

Applic. No. : 10/057,105

The specification of the instant application states in the paragraph bridging pages 17 and 18, that

The embodiment of the invention is not restricted to the exemplary embodiments explained above. ... the number of four laser diodes is to be understood as being provided only by way of example. A different number of laser diodes, for instance 8, 16 or else 6 laser diodes, can equally be used.

Applicant is aware that limitations recited in the specification are not read into the claims for the purpose of overcoming the prior art. Yet one can make the assumption that *Epworth* may also only show four "channels" in the diagram, like the diagrams of the instant application, but may actually use a larger number of "channels".

It is well settled that most all claimed inventions are but novel combinations of old features, and consequently, MPEP § 2143 requires that there must be some *suggestion or motivation* for combining references in the prior art for a *prima facie* case of obviousness.

For more than 8 channels, *Hayee* does *not* suggest that RZ is superior to NRZ modulation. To the contrary, for more than 16 channels *Hayee* clearly indicates that NRZ is superior to RZ modulation. Consequently, Applicant believes that it would not have been obvious to one of ordinary skill in the art to

Applic. No. : 10/057,105

use RZ modulation with the Epworth system since Hayee teaches that RZ may be more optimal only if the number of channels is low.

It is accordingly believed to be clear that Epworth in view of Hayee do not suggest the features of claims 1 and 16. Claims 1 and 16 are, therefore, believed to be patentable over the art and because claims 2-15 are ultimately dependent on claim 1 and claims 17-23 are ultimately dependent on claim 16, respectively, they are believed to be patentable as well.

Considering the deficiencies of Epworth, it is believed not to be necessary at this stage to address the secondary references Das et al. and Frankel applied in the rejection of certain dependent claims, and whether or not there is sufficient suggestion or motivation with a reasonable expectation of success for modifying or combining the references as required by MPEP § 2143.

In the event the Examiner should still find any of the claims to be unpatentable, the Examiner is respectfully requested to telephone Counsel so that, if possible, patentable language can be worked out. In the alternative, the entry of the amendment is requested as it is believed to place the application in better condition for appeal, without requiring extension of the field of search.

Applic. No. : 10/057,105

In view of the foregoing, consideration and allowance of claims 1-24 and 26 are solicited.

If an extension of time is required, petition for extension is herewith made.

Please charge any fees that might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,



Markus Nolf (Reg. No. 37,006)

November 10, 2003

Lerner and Greenberg, P.A.
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101